

# East Texas Plant Materials Center

## Nacogdoches, TX

### HERBACEOUS MIMOSA PERFORMANCE REVIEW FOR USE AS A PERENNIAL NATIVE WARM SEASON LEGUME IN PASTURES IN THE WESTERN COASTAL PLAIN



Low growing Crockett Germplasm Herbaceous Mimosa plot, seen in rear, produced 228% more dry matter than taller prairie acacia and panicked tick-clover plots seen flanking.

Previous performance of perennial legume species in controlled plots by Texas Agrilife showed Crockett Germplasm herbaceous mimosa, a warm season, perennial legume released by the ETPMC, was capable of producing in excess of 6500 lb/acre of high quality forage per year. In further advancing the potential for Crockett Germplasm as a forage component in southern pastures, the ETPMC, in cooperation with LSU Ag Center’s Red River Research Station, established Crockett Germplasm into bermudagrass in twelve grazing paddocks. The goal is to determine the feasibility of utilizing Crockett Germplasm with bermudagrass as a sustainable forage for southern livestock producers. Experimental grazing treatments include:

- Continually grazed year round, no restricted access
- No grazing, 100% access restricted
- Periodic grazing, grazed as foliage allows with recovery time permitted between grazing events
- Grazed until September 1 of each year.

### QUALITY AND YIELD OF SEVEN FORAGES GROWN UNDER PARTIAL SHADING OF A SIMULATED SILVOPASTORAL SYSTEM IN EAST TEXAS



Freshly Planted Plugs



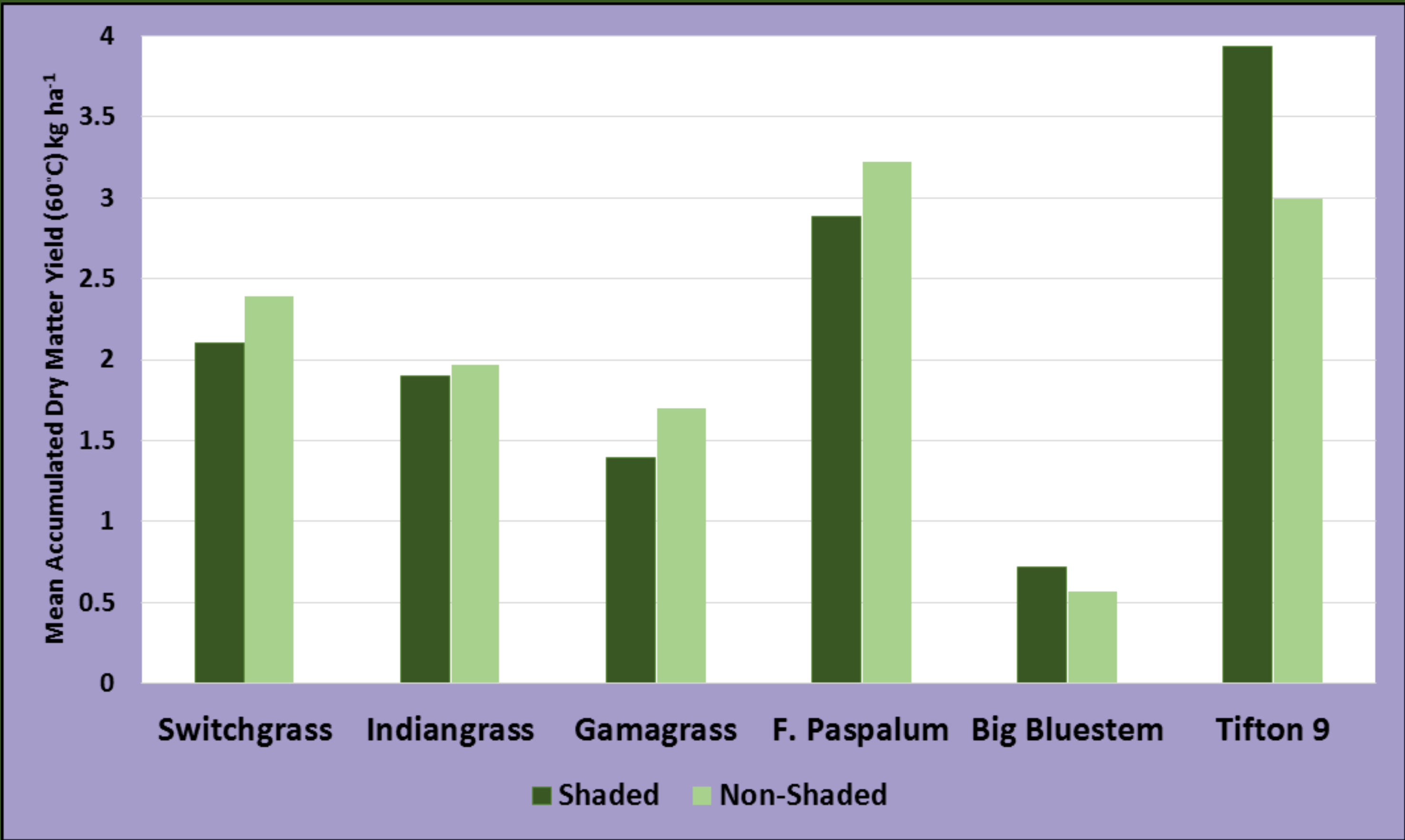
Sampling Area



Plot Design

This three year study was developed in 2012 to determine the effects of shade on the growth and production of seven forage grasses, ‘Tifton 85’ bermudagrass, ‘Tifton 9’ bahiagrass, ‘Kaw’ big bluestem, ‘Americus’ Indiangrass, ‘Alamo’ switchgrass, ‘Nacogdoches’ eastern gamagrass, and Harrison Germplasm Florida paspalum. Forages were exposed to an open environment (non-shaded) and 50% shade. Plots were harvested on two week intervals to simulate intensive grazing in a silvopastoral system and to evaluate yield and forage quality of crude protein and digestibility. There was a decline in forage yield under shade, but the decrease in production was minimal when compared to the open environment. Shade improved forage quality of both native and introduced forages.

Yield of Six Forages in a Shaded and Non-Shaded Environment



### ADAPTATION OF PLANT MATERIAL PROGRAM RELEASED NATIVE WARM SEASON PERENNIAL GRASSES FROM THE SOUTHEASTERN US TO EAST TEXAS

The ETPMC is evaluating the performance and adaptation of native, warm season, perennial grasses for conservation use. The evaluation focuses on commercially available, cultivar releases of big bluestem, little bluestem, switchgrass, and Indiangrass developed by USDA NRCS Plant Materials Centers. Half of each plot is harvested at the boot stage of growth. A second harvest is made after first frost to assess season long production and the regrowth from the first harvest made at the boot stage. In addition to biomass, plant height, stem diameter and percent stand is taken to further categorize their performance. Performance of grass cultivars have been surprisingly similar at the ETPMC.



Switchgrass plot showing regrowth from boot stage harvest next to uncut plot.

Dry matter yield, stand height, stem diameter, and percent stand of switchgrass, little bluestem, big blue stem, and Indiangrass on 23 May 2014.

Little Blue Releases	Dry Matter Yield	Height	Stem Diameter	% Stand
	--lb/acre--	--in--	--cm--	55.5%
9094826 (E. TX)	1434 A	61 A	.28 A	48 B
Aldous	1178 A	52 B	.24 AB	88 B
Cimarron	1542 A	47 B	.19 B	96 A
Ok Select	1935 A	62 A	.21 AB	93 A

Big Blue Releases	Dry Matter Yield	Height	Stem Diameter	% Stand
	--lb/acre--	--in--	--cm--	
Kaw	1886 A	50 A	.27 B	100 A
Earl	1442 A	51 B	.44 A	28 B
Roundtree	1355 A	53 B	.33 AB	100 A
OZ-70	1791 A	60 A	.35 AB	100 A

Indiangrass Releases	Dry Matter Yield	Height	Stem Diameter	% Stand
	--lb/acre--	--in--	--cm--	
Rumsey	3342 A	64 A	.43 B	79 B
Americus	4663 A	64 A	.55 A	98 A
Lometa	2227 A	64 A	.42 B	93 A
Osage	2831 A	64 A	.43 B	100 A
Cheyenne	2947 A	65 A	.38 B	100 A

Switchgrass Releases	Dry Matter Yield	Height	Stem Diameter	% Stand
	--lb/acre--	--in--	--cm--	
Blackwell	1225 A	64 A	.43 B	79 B
Alamo	1225 A	64 A	.55 A	98 A
Cave-in-Rock	1249 A	64 A	.42 B	93 A
Kanlow	1123 A	64 A	.43 B	100 A
9111965 (S. TX)	1918 A	65 B	.38 B	100 A

### SHELTER BELTS FOR IMPROVING AIR QUALITY ADJACENT TO POULTRY PRODUCTION FACILITIES

The ETPMC has a cooperative study with Dr. Sheryll Jerez, Stephen F. Austin State University, to evaluate the effectiveness of arborvitae, Arizona cypress, roughleaf dogwood, eastern red cedar, American holly, yaupon, and wax myrtle for reducing particulate matter, ammonia, and odor from exhaust areas of poultry production houses. Ventilation rates and air speed from exhaust fans determine tree orientation from the house. Particulate matter, concentrations of ammonia, hydrogen sulfide, and odor are obtained at critical periods to assess air quality and their effects on tree growth and survival. Early results have shown yaupon and American holly to have excellent survivability.



Nasal Ranger field Olfactometer used to measure the odor-dilution-to-threshold ratio upwind and down wind of poultry houses.



Students from SFASU planting replicated plots of evergreen tree and shrubs in front of poultry house exhaust fans.